

**National Security and  
International Affairs Division  
B-254942****September 24, 1993**

**The Honorable Norman Sisisky  
Chairman, Subcommittee on Oversight  
and Investigations  
Committee on Armed Services  
House of Representatives**

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**Dear Mr. Chairman:**

This report responds to your request for information on the estimated cost at completion for the C-17 program's lot III production contract. Specifically, you requested that we (1) review the basis for the Defense Plant Representative Office's (DPRO) modification to its original cost estimate and (2) provide our assessment of whether costs are likely to exceed the C-17 lot III contract ceiling price.

**RESULTS IN BRIEF**

In May 1993, the DPRO initially estimated that the lot III contract would exceed the ceiling price. However, the DPRO, based on a Defense Contract Audit Agency (DCAA) recommendation, reclassified certain engineering costs previously charged to the lot III and other production contracts. As a result, the DPRO moved these costs from the production contracts to the development contract and revised its cost estimate. By removing the reclassified engineering costs, the DPRO's revised lot III estimate fell below the ceiling price.

The DPRO's modification, removing the disputed engineering costs from their lot III cost estimate, was reasonable and consistent with its stated position that such costs should be charged to a development contract rather than to a production contract.

According to Air Force officials, their 1993 annual estimate showed that the lot III contract costs would be under the contract ceiling price. However, our evaluation of contractor cost performance data, using a

**GAO/NSIAD-93-301R C-17 Lot III Production Contract**

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different approach than the Air Force, suggests that lot III contract costs are likely to exceed ceiling.

BACKGROUND

In 1982, the Air Force awarded a fixed-price, incentive-fee contract for the development and initial production of the C-17. In addition to the full-scale engineering and development work, this development contract included the production of six aircraft--two under lot I and four under lot II. The ceiling price of the development contract, including the two production lots is \$6.7 billion. A separate fixed-priced contract for the third production lot of four aircraft (lot III) was awarded in 1991, with a ceiling price of \$1.215 billion.

The DPRO regularly monitors cost growth and has developed contract cost estimates to administer progress payments on the C-17 program. The DPRO began developing cost estimates in 1990 when it determined that the contractor's estimates for the developmental contract were unrealistic. The DPRO updates the cost estimate when deteriorating cost and schedule trends are observed or adverse technical developments warrant a revised estimate.<sup>1</sup>

For progress payment administration, the DPRO develops a detailed, "bottom-up" estimate of the costs required to complete the contract. DPRO functional specialists in areas such as engineering and testing who have knowledge of the contractor's operations and the contract requirements determine the extent of work remaining. The DPRO cost analyst then compiles the various functional assessments and determines the costs required to complete the work remaining on contract. This estimate is added to the costs already incurred, establishing a detailed cost estimate for the contract. The DPRO feels this detailed approach is the most accurate way to develop a contract cost estimate.

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<sup>1</sup>Accurate contract cost estimates are essential to determine whether the contractor will exceed the contract ceiling price, requiring application of a loss ratio. The purpose of a loss ratio is to reduce progress payments to reflect a portion of the contractor's expected loss. This is done to preclude premature payments and to recognize the amount of the loss over the contract's entire performance period rather than at the end of the contract.

Another method for developing contract cost estimates involves the use of cost performance report (CPR) data. Timely recognition of degrading contract cost performance and the ability to project a potential contract overrun are key features of cost performance reporting. The CPR data measures contractor cost and schedule performance against a budget baseline. Both the Air Force and the Department of Defense often use various formulas that utilize CPR data to make projections of future contract costs.

**DPRO REDUCES LOT III COST  
ESTIMATE BY REMOVING DISPUTED  
ENGINEERING COSTS**

In May 1993, the DPRO, using its "bottom-up" cost estimating approach, updated the cost estimate it uses to administer progress payments on the lot III production contract. The result of this effort was a cost estimate for the lot III contract which was \$1.242 billion--\$27 million over the contract ceiling price of \$1.215 billion.

Based on previous evaluations of contractor costs, the DPRO and the Defense Contract Audit Agency (DCAA) determined that the contractor's methodology for charging engineering costs was inappropriate. Specifically, the DCAA cited serious deficiencies in internal controls over engineering costs charged to C-17 contracts. The DCAA identified engineering charges to the production lots, including the lot III contract, that should have been classified as a full-scale engineering and development effort and therefore charged to the development contract.<sup>2</sup>

This position is disputed by the contractor, who claimed prior Air Force concurrence with the cost-charging methodology being used. The DCAA recommended and the DPRO adopted a position of treating the disputed engineering charges as full-scale engineering and development costs and has consistently reclassified the costs for progress payment purposes. The net effect of the DPRO's actions has been to adjust the progress

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<sup>2</sup>For more information on this subject, see Audit of Contractor Accounting Practice Changes For C-17 Engineering Costs; Department of Defense, Office Of The Inspector General, Report Number 92-046, Feb. 13, 1993.

payments by moving the disputed engineering costs from the lot III contract to the development contract.

In May 1993, the disputed costs, amounting to about \$31 million, were removed from the lot III contract and placed under the development contract, and the DPRO adjusted the lot III cost estimate to reflect this reduction. This modification had the effect of offsetting the over-ceiling estimate. The DPRO's revised cost estimate, \$1.211 billion, is \$4 million less than the contract ceiling of \$1.215 billion and therefore did not result in the application of a loss ratio to the subsequent progress payment.

We examined the rationale for the DPRO's actions and found it to be reasonable and consistent with both the DPRO's past actions and its stated position on the disputed engineering costs. DPRO officials expect these actions to continue as additional disputed engineering costs are identified and reclassified by DCAA or until the government and the contractor resolve how and where these costs should be charged.

Our analysis showed that the reclassification had a negative effect of \$1.1 million on the cash flow of the contractor. Had the DPRO not reclassified the charges, the contractor would have received progress payments totalling \$26.0 million. As a result of the DPRO actions, the contractor received \$24.9 million. This is because the impact of the loss ratio on the development contract is greater than it would have been on the lot III contract, had the costs not been transferred.

LOT III COSTS LIKELY TO EXCEED  
CONTRACT CEILING PRICE

In our March 10, 1993 testimony,<sup>3</sup> we reported that the DPRO continued to increase the government's estimate of cost to complete because of the deteriorating cost performance trends on the lot III contract. Subsequently, with the assistance of a consultant, we evaluated cost performance on the lot III contract and concluded that costs will likely exceed the ceiling price for lot III.

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<sup>3</sup>Military Airlift: Status of the C-17 Development Program, GAO/T-NSIAD-93-6, Mar. 10, 1993.

In our testimony, we also pointed out that the DPRO was concerned about several contract practices which it believed could obscure and delay the timely reporting of negative cost performance data on the lot III contract. Two examples were (1) the use of a baseline to measure cost performance that is greater than the contract target cost--normally only done when a contract has already overrun its budget and (2) the possible front loading of the contract budget, that is, overstating the budget for work to be done early in the contract and understating the budget for later work. These conditions may inhibit the contract manager's ability to project an over-ceiling condition, which is crucial to precluding premature progress payments.

To assess the likelihood of lot III costs exceeding the contract ceiling price, we and the consultant, who has specialized analytic skills in reviewing DOD cost/schedule control systems, first analyzed cost performance data reported by the contractor in their monthly CPRs. However, traditional cost performance forecasting techniques rely on accurate baselines, cost performance indicators, and trend data. Based on the preliminary analysis of the cost performance reports, our consultant agreed with the DPRO's concerns about using cost performance report data to evaluate cost and schedule performance under the lot III contract. Therefore, he advised us that using traditional cost performance forecasting techniques would not be appropriate for developing lot III cost-to-complete estimates because the use of the over-target cost baseline and possible front loading would distort such forecasts.

For the lot III contract, our consultant developed cost estimates using a methodology that controlled for the concerns raised by the DPRO. Based on this analysis, our consultant concluded that the lot III contract was likely to exceed ceiling. Our consultant's analysis was based on extrapolation of actual cost data over a specified time period. This trend analysis used a combination of actual lot III cost data and the experience from the lot II cost performance data to help project costs for the remaining period of the lot III contract. Using this methodology, our consultant estimated the lot III contract cost at completion to be \$1.242 billion--\$27 million over the contract ceiling price of \$1.215 billion.

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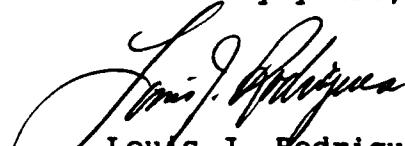
However, factors not included in our consultant's analysis could increase or decrease the cost estimate. These include retrofit costs for repairs of inadequate wings, flaps, and slats; delivery schedule slips; and the transfer of disputed engineering costs described above. When these factors are considered, a range of possible cost estimates could be developed based on the differing assumptions. However, we believe that including these factors in the cost analysis would still produce a cost estimate that exceeds the contract ceiling price.

As requested, we did not obtain written agency comments. However, we discussed a draft of this report with responsible officials from the Defense Plant Representative Office at the contractor's plant, Long Beach, California, and the Air Force. Air Force officials disagreed with our consultant's conclusions about using lot III cost performance report data and indicated that their 1993 annual estimate showed that the lot III contract costs would be under the contract ceiling price. However, they did not directly challenge our conclusion that contract costs will likely exceed ceiling.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this letter until 30 days from its date. At that time, we will provide copies to the Chairmen, Senate and House Committees on Armed Services, the Secretaries of Defense and the Air Force, and the Director of the Office of Management and Budget. Copies will also be made available to others upon request.

If you or your staff have questions on this letter, please call me on (202) 512-4841. Major contributors to this product were Robert J. Stolba, James A. Elgas, Noel J. Lance, and John P. Parker.

Sincerely yours,



Louis J. Rodrigues

Director, Systems Development  
and Production Issues

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